Level Detector

Part 106 988A

NORDSON CORPORATION • AMHERST, OHIO • USA

CE

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Notice

Trademarks

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Level Detector

1. Safety

This section contains general safety instructions for using your Nordson equipment. Task- and equipment-specific warnings are included in other sections of this manual where appropriate. Note all warnings and follow all instructions carefully. Failure to do so may result in personal injury, death, or property damage.

To use this equipment safely,

- read and become familiar with the general safety instructions provided in this section of the manual before installing, operating, maintaining, or repairing this equipment.
- read and carefully follow the instructions given throughout this manual for performing specific tasks and working with specific equipment.
- store this manual within easy reach of personnel installing, operating, maintaining, or repairing this equipment.
- follow all applicable safety procedures required by your company, industry standards, and government or other regulatory agencies. Refer to the National Fire Protection Association (NFPA) standard 33 and to federal, state, regulatory agency, and local codes for rules and regulations covering installation and operation of spray systems.
- obtain and read Material Safety Data Sheets (MSDS) for all materials used.

Safety Symbols

Become familiar with the safety symbols presented in this section. These symbols will alert you to safety hazards and conditions that may result in personal injury, death, or property and equipment damage.

WARNING: Failure to observe this warning may result in personal injury, death, or equipment damage.

Safety Symbols *(contd.)*

WARNING: Risk of electrical shock. Failure to observe this warning may result in personal injury, death, or equipment damage.

WARNING: Disconnect equipment from line voltage. Failure to observe this warning may result in personal injury, death, or equipment damage.

WARNING: Risk of explosion or fire. Fire, open flames, and smoking prohibited.

WARNING: Wear protective clothing, safety goggles, and approved respiratory protection. Failure to observe may result in serious injury.

WARNING: Hot! Risk of burns. Wear heat-protective clothing, safety goggles with side shields and/or heat-protective gloves depending on the symbol shown.

WARNING: System or material pressurized. Relieve pressure. Failure to observe this warning may result in serious injury or death.

WARNING: Injection. Do not point this device at yourself or other personnel. Failure to observe this warning may result in serious injury or death.

Safety Symbols (contd.)

CAUTION: Failure to observe may result in equipment damage.

CAUTION: Hot surface. Failure to observe may result in burns.

Qualified Personnel

"Qualified personnel" is defined here as individuals who thoroughly understand the equipment and its safe operation, maintenance, and repair. Qualified personnel are physically capable of performing the required tasks, familiar with all relevant safety rules and regulations, and have been trained to safely install, operate, maintain, and repair the equipment. It is the responsibility of the company operating this equipment to see that its personnel meet these requirements.

Intended Use

WARNING: Use of this equipment in ways other than described in this manual may result in personal injury, death, or property and equipment damage. Use this equipment only as described in this manual.

Nordson Corporation cannot be responsible for injuries or damages resulting from nonstandard, unintended applications of its equipment. This equipment is designed and intended only for the purpose described in this manual. Uses not described in this manual are considered unintended uses and may result in serious personal injury, death, or property damage. Unintended uses may result from taking the following actions:

- making changes to equipment that have not been recommended or described in this manual or using parts that are not genuine Nordson replacement parts
- failing to make sure that auxiliary equipment complies with approval agency requirements, local codes, and all applicable safety standards
- using materials or auxiliary equipment that are inappropriate or incompatible with your Nordson equipment
- allowing unqualified personnel to perform any task

Installation

Read the installation section of all system component manuals before installing your Nordson equipment. A thorough understanding of system components and their requirements will help you to install this equipment safely and efficiently.

WARNING: Failure to follow these safety procedures can result in personal injury or death.

- Allow only qualified personnel to install Nordson equipment.
- Use only approved equipment. Using unapproved equipment in an approved system may void agency approvals.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- Follow all instructions for installing components and accessories.
- Install all electrical, pneumatic, gas, and hydraulic connections to local code.
- Install locking, manual, shutoff valves in the air supply lines to the system. This allows you to relieve air pressure and lock out the pneumatic system before undertaking maintenance and repairs.
- Install a locking disconnect switch or breaker in the service line ahead of any electrical equipment.
- Use only electrical wire of sufficient gauge and insulation to handle the rated current demand. All wiring must meet local codes.
- Ground all electrically conductive equipment. Ungrounded conductive equipment can store a static charge which could ignite a fire or cause an explosion if a hot spark is discharged.
- Route electrical wiring, electrostatic cables, and air hoses and tubing along a protected path. Make sure they will not be damaged. Do not bend electrostatic cables around a radius of less than 6 in. (152 mm).
- Install safety interlocks and approved, fast-acting fire detection systems. These shut down the spray system and any flammable liquid supply if a ventilation or electrical problem occurs, a fire is detected, or other emergency situation develops.

***Installation** (contd.)*

- Make sure the spray area floor is conductive to ground and that the operator's platform is grounded.
- Use only designated lifting points or lugs to lift and move heavy equipment. Always balance and block loads when lifting to prevent shifting. Lifting devices must be inspected, certified, and rated for a greater weight than the equipment being lifted.
- Do not use unapproved fluid hoses. Solvents may cause them to deteriorate rapidly which may allow flammable or pressurized material to escape.
- Protect components from damage, wear, and harsh environmental conditions.
- Allow ample room for maintenance, material supply container drop-off and loading, panel accessibility, and cover removal.
- Protect equipment with safety devices as specified by applicable safety regulations.
- If safety devices must be removed for installation, install them immediately after the work is completed and check them for proper functioning.

Operation

Only qualified personnel, physically capable of operating the equipment and with no impairments to their judgement or reaction times, should operate this equipment.

Read all component manuals before operating this equipment. A thorough understanding of system components and their operation will help you operate the system safely and efficiently.

- Use this equipment only in the environments for which it is rated. Do not operate this equipment in humid, flammable, or explosive environments unless it has been rated for safe operation in these environments.
- Before starting this equipment, check all safety interlocks, fire-detection systems, and protective devices such as panels and covers. Make sure all devices are fully functional. Do not operate the system if these devices are not working properly. Do not deactivate or bypass automatic safety interlocks, locked-out electrical disconnects, or pneumatic valves.

***Operation** (contd.)*

- Know where *EMERGENCY STOP* buttons, shutoff valves, and fire extinguishers are located. Make sure they work. If a component malfunctions, shut down and lock out the equipment immediately.
- Before operating, make sure all conductive equipment, objects being sprayed, and fluid containers are connected to a true earth ground.
- Never operate equipment with a known malfunction or leak.
- Never point handguns or applicator nozzles at yourself or other persons.
- Never touch exposed electrical connections on equipment while the power is ON.
- Do not operate the equipment at pressures higher than the rated maximum working pressure of any component in the system.
- Shut off moving equipment before taking measurements or inspecting workpieces.
- Know the pinch points, temperatures, pressures, and material composition for all equipment that you are working with. Recognize potential hazards associated with these and exercise appropriate caution.
- Wear shoes with conductive soles, such as leather, or use grounding straps to maintain a connection to ground when working with or around electrostatic equipment.
- Do not wear or carry metallic objects (jewelry or tools) while working with or around electrostatic equipment. Ungrounded metal can store a static charge and cause harmful shocks.
- Maintain skin-to-metal contact between your hand and the gun handle to prevent shocks while operating manual electrostatic spray guns. If wearing gloves, cut away the palm or fingers.
- Shut off electrostatic power supplies and ground gun electrodes before making adjustments to powder spray guns.
- If you notice electrical arcing in a spray area, shut down the system immediately. An arc can cause a fire or explosion.
- Keep parts of the body or loose clothing away from rotating parts. Remove personal jewelry and cover or tie back long hair.

***Operation** (contd.)*

- Wear National Institute of Occupational Safety and Health (NIOSH) approved respirators while operating spray equipment and when performing maintenance and cleaning tasks.
- Wear eye protection when operating spray equipment.
- Wear gloves and protective clothing to protect your skin from materials.
- Keep paint pumps, pressure pots, and containers of flammable coating materials or solvents far enough away from spray booths to prevent their inclusion in a booth fire.
- Do not smoke in the spray area. A lit cigarette could ignite a fire or cause an explosion.
- Treat all high-pressure fittings and hoses as if they could leak. High-pressure compressed air can be injected under the skin and cause serious injury or death.
- Do not use materials that will corrode the equipment.
- Do not attempt to operate electrical equipment if standing water is present.
- Wash exposed skin frequently with soap and water, especially before eating or drinking. Do not use solvents to remove coating materials from your skin.

Less-obvious Dangers

Operators should also be aware of less-obvious dangers in the workplace that often cannot be completely eliminated:

- exposed surfaces on the equipment which may be hot or have sharp edges and cannot be practically safeguarded
- electrical equipment which may remain energized after the equipment has been shut off
- vapors and materials which may cause allergic reactions or other health problems
- automatic hydraulic, pneumatic equipment, or mechanical parts that may move without warning
- unguarded, moving mechanical assemblies

Action in the Event of a System or Component Malfunction

Do not operate a system that contains malfunctioning components. If a component malfunctions, turn the system OFF immediately.

- Disconnect and lock out electrical power. Close and lock out hydraulic and pneumatic shutoff valves and relieve pressures.
- Allow only qualified personnel to make repairs. Repair or replace the malfunctioning component according to instructions provided in its manual.

Maintenance and Repair

Allow only qualified personnel to perform maintenance, troubleshooting, and repair tasks. Only persons who are properly trained and familiar with Nordson equipment are permitted to service this equipment.

- Always wear appropriate protective clothing and use safety devices when working on this equipment.
- Follow the recommended maintenance procedures in your equipment manuals.
- Do not service or adjust any equipment unless another person trained in first aid and CPR is present.
- Disconnect, lock out, and tag electrical power at a disconnect or breaker in the service line ahead of electrical equipment before servicing.
- Relieve air and fluid pressures before servicing equipment. Follow the specific instructions in this manual.
- Use only genuine Nordson replacement parts. Using unapproved parts or making unapproved modifications to equipment may void agency approvals and create safety hazards.

WARNING: Note the flash point of the cleaning solvent used. Only use controlled methods and equipment, such as temperature-controlled or explosion-protected heaters, to heat cleaning solvent. Observe explosion-prevention regulations and follow applicable safety instructions.

- Refer to the MSDS before using solvents to clean this equipment. The MSDS will provide use, storage, and disposal information about the solvent. Read this information carefully and follow instructions.

Maintenance and Repair *(contd.)*

- Never use an open flame to clean the unit or components of the unit.
- Do not store flammable materials in the spray area or room. Keep paint pumps, pressure pots, and containers of flammable coating materials or solvents far enough away from spray booths to prevent their inclusion in a booth fire. If a fire or explosion occurs, flammable materials in the area will increase the chances and the extent of personal injuries and property damage.
- Make sure that the room where you are working is sufficiently ventilated. Avoid breathing vapors over prolonged periods of time.
- Check interlock systems periodically to ensure their effectiveness.

WARNING: Operating faulty or electrostatic equipment is hazardous and can cause electrocution, fire, or explosion. Make resistance checks part of your periodic maintenance program.

- Check all ground connections periodically with a megohm meter. Resistance to ground must not exceed one megohm. If sparks or arcing occur, shut down the system immediately.
- Connect all disconnected equipment ground cables and wires after servicing the equipment. Ground all conductive equipment.

WARNING: Service lines connected to panel disconnect switches will still be energized unless power is shut off at another disconnect ahead of the panel. Make sure the power is off before servicing. Wait 5 minutes for capacitors to discharge after shutting off the electrical power.

- Turn off the electrostatic power supply and ground the gun electrode before adjusting or cleaning the nozzles, fluid tips, or air caps.
- If a “power on” test is required, perform the test carefully and then shut off and lock out power as soon as the test is over.
- Never troubleshoot the power supply without first disconnecting all external power supplies and discharging the high-voltage capacitors with an insulated screwdriver.
- Ground electrodes and electrostatic cable ends before touching them.

Maintenance and Repair (contd.)

- Do not attempt to service electrical equipment if there is standing water present. Do not service electrical equipment in a high-humidity environment.
- Use tools with insulated handles when working with electrical equipment.
- Keep high-voltage connection points clean and insulated with dielectric grease or oil.
- Do not attempt to service a moving piece of equipment. Shut off the equipment and lock out power. Secure equipment to prevent uncontrolled movement.

Material and Solvent Precautions

WARNING: Hot! Risk of burns. Wear heat-protective clothing, eye protection with side shields and/or heat-protective gloves.

Heated materials may cause severe burns on contact. Remember that some materials, even solid materials, may retain heat for some time. If you are burned by a heated material, immediately cool the affected skin with lots of cool, clean water. Do not try to remove hot, melted material from the skin. Seek immediate medical attention.

High-pressure fluids, unless they are safely contained, are extremely hazardous. A jet of high-pressure fluid can act like a knife or needle, penetrate skin and muscle, and inject itself into your body. Injected fluids can cause toxic poisoning.

Do not treat an injection injury as minor. Seek medical care immediately. Inform the medical staff at the hospital that you have an injection injury and identify the fluid that was injected. If possible, give the doctor copies of the MSDS for the injected fluid and for any additives, such as solvents, that are in the injected fluid.

Also, Nordson recommends that you carry a National Safety Equipment Manufacturers Association (NSEMA) wallet card to give to emergency medical staff in the event of an injection injury. These cards are supplied with the equipment. Additional cards are available free from Nordson Corporation.

Material and Solvent Precautions *(contd.)*

WARNING: Injection hazard. Do not go near a known leak in a hose or fitting, and stay clear of all spray nozzles or orifices. Do not point an applicator at yourself or other personnel. The high-pressure fluid into the body causing serious injury or death.

To prevent an injection injury, take some basic safety precautions when operating your equipment.

- Always handle spray applicators carefully. Do not point a pressurized gun at yourself or other personnel.
- Never place hands, fingers, or other parts of your body directly over a spray nozzle or in front of a leak in a high-pressure system.
- Never “back-flush” the nozzles. Blocking a nozzle causes the high-pressure fluid to reverse direction and can lead to an injection injury.
- Always relieve system pressure before servicing equipment. Trigger all applicators and bleed off system pressure.

Halogenated hydrocarbon solvents can cause an explosion when used with aluminum components in a pressurized fluid pumping system (pumps, heaters, filters, valves, spray guns, and tanks). The explosion could cause serious bodily injury, death, or substantial property damage. No available stabilizers will prevent this violent reaction from happening.

WARNING: Never use halogenated hydrocarbon solvents to clean aluminum parts or to flush any system. Cleaning agents, coatings and paints, or adhesives may contain halogenated hydrocarbon solvents. Obtain and read the MSDS for each material and solvent being used.

- Use nonhalogenated solvents.
- Contact your solvent supplier to determine whether your existing materials and solvents contain halogenated hydrocarbons or to obtain a suitable, nonhalogenated hydrocarbon solvent for cleaning and flushing your system.

Material and Solvent Precautions *(contd.)*

- See Table 1. Check the labels on your solvent containers. Halogenated hydrocarbon solvents can be recognized if any of the following elements are listed in the name of the product or as an ingredient:

Element	Symbol	Prefix
Flourine	F	“Flouro-”
Chlorine	Cl	“Chloro-”
Bromine	Br	“Bromo-”
Iodine	I	“Iodo-”

If you are now using halogenated hydrocarbon solvents in pressurized systems with aluminum components, perform the following steps:

- Pump the system empty, shut off the pumps, and relieve the system pressure.
- Disassemble and inspect the system components. Replace any damaged or corroded parts.
- Thoroughly clean all noncorroded parts with nonhalogenated hydrocarbon.
- Contact your coatings, solvent, or adhesive supplier for a nonhalogenated solvent to thoroughly flush the entire system before operating it.
- If you must continue to use halogenated hydrocarbon solvents, consult your Nordson representative about compatible Nordson components.

Material and Solvent Precautions (contd.)

Table 1 Solvents Containing Halogenated Fluids

Chlorinated Solvents	Iodinated Solvents	Brominated Solvents	Fluorocarbon Solvents
Carbon Tetrachloride	Ethyl Iodide	Ethylene Dibromide	Dichlorofluoromethane
Chloroform	Methyl Iodide	Methyl Bromide	Trichlorofluoromethane
Ethylene Dichloride	N-butyl Iodide	Methylene Chlorobromide	Freon
Methylene Chloride	Propyl Iodide		
1-1-1 Trichloroethane			
Monochlorobenzene			
Orthodichlorobenzene			
Perchloroethylene			
Trichloroethylene			

Disposal

Dispose of equipment and materials used in operation and cleaning according to your local regulations.

2. Safety Labels

Table 2 contains the part number and description of the safety label on the Level Detector. This label is provided to help you operate your equipment safely. See Figure 1 for the location of the safety label.

Table 2 Safety Label

Item	Part	Description
1.	248 316	Disconnect main power supply before removing this panel.

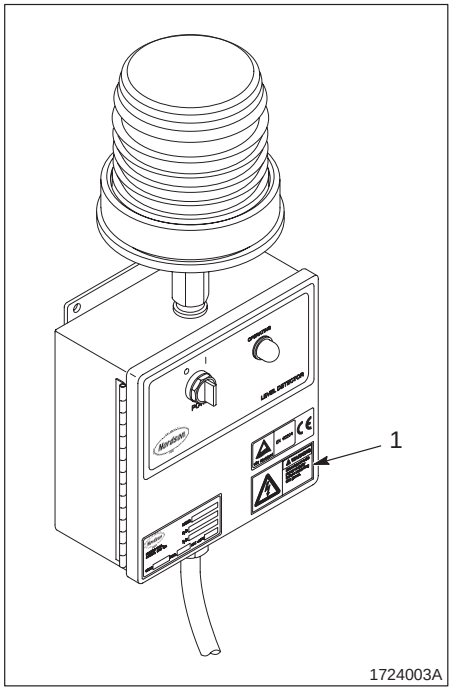


Fig. 1 Safety label location

3. Description

See Figure 2. The Nordson Level Detector monitors the amount of material remaining in a supply reservoir. The unit consists of a strobe light (1), a NEMA 12 (IP54) enclosure (2), and a float assembly (3). The float assembly attaches to a supply reservoir. The unit can be surface mounted or installed on a Nordson Blue Box.

4. Theory of Operation

The float assembly contains a float and a liquid level switch. The float monitors the amount of material in the supply reservoir. When the float reaches a certain level, the liquid level switch closes and turns on the strobe light. This indicates that the supply reservoir must be filled. Filling the supply reservoir allows the float to rise. When the float reaches a certain level, the liquid level switch opens and turns off the strobe light.

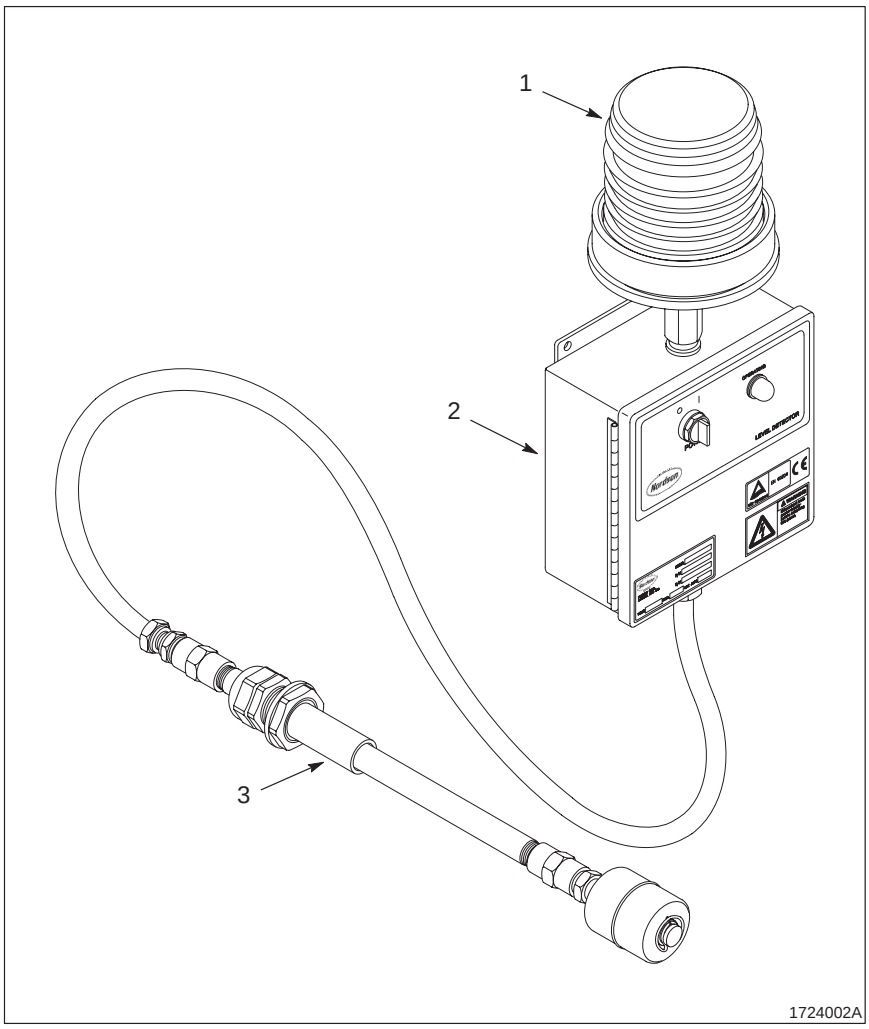


Fig. 2 Level Detector

1. Strobe light
2. Enclosure
3. Float assembly

5. Installation

WARNING: Allow only qualified personnel to perform the following tasks. Observe and follow the safety instructions in this document and all other related documentation.

Mounting

Mounting holes are provided on both sides of the Nordson Blue Box for mounting the Level Detector. If the level detector will not be installed to a Nordson Blue Box, mount it in another accessible location. The mounting hole dimensions are 6 in. (152 mm) x 8.75 in. (222 mm).

Electrical Connections

NOTE: This enclosure complies with NEMA 12 (IP54) standards. To maintain the enclosure's NEMA 12 (IP54) integrity, use a customer-supplied, sealed, strain relief for the input power wires.

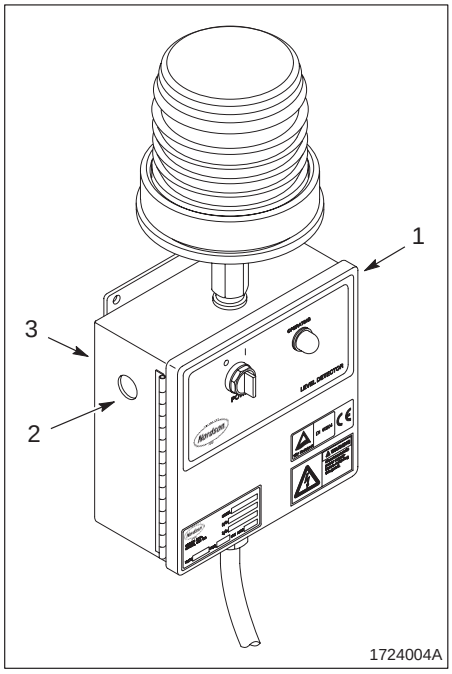


Fig. 3 Recommended hole location

1. *Enclosure door*
2. *Hole*
3. *Enclosure*

1. See Figure 3. Loosen the latch screws securing the enclosure door (1).
2. Drill a hole (2) through the enclosure (3).
3. Install a sealed strain relief into the hole (2)
4. Route the input wires through the strain relief.

NOTE: The Level Detector is factory-wired for 230/240 VAC operation. To select another input voltage, refer to the AC INPUT HOOKUP decal located on the enclosure door.

5. See Figure 4. Connect the input power wires to L1 and L2.
6. Connect the input ground wire to PE.
7. See Figure 3. Close the enclosure door (1). Tighten the latch screws.

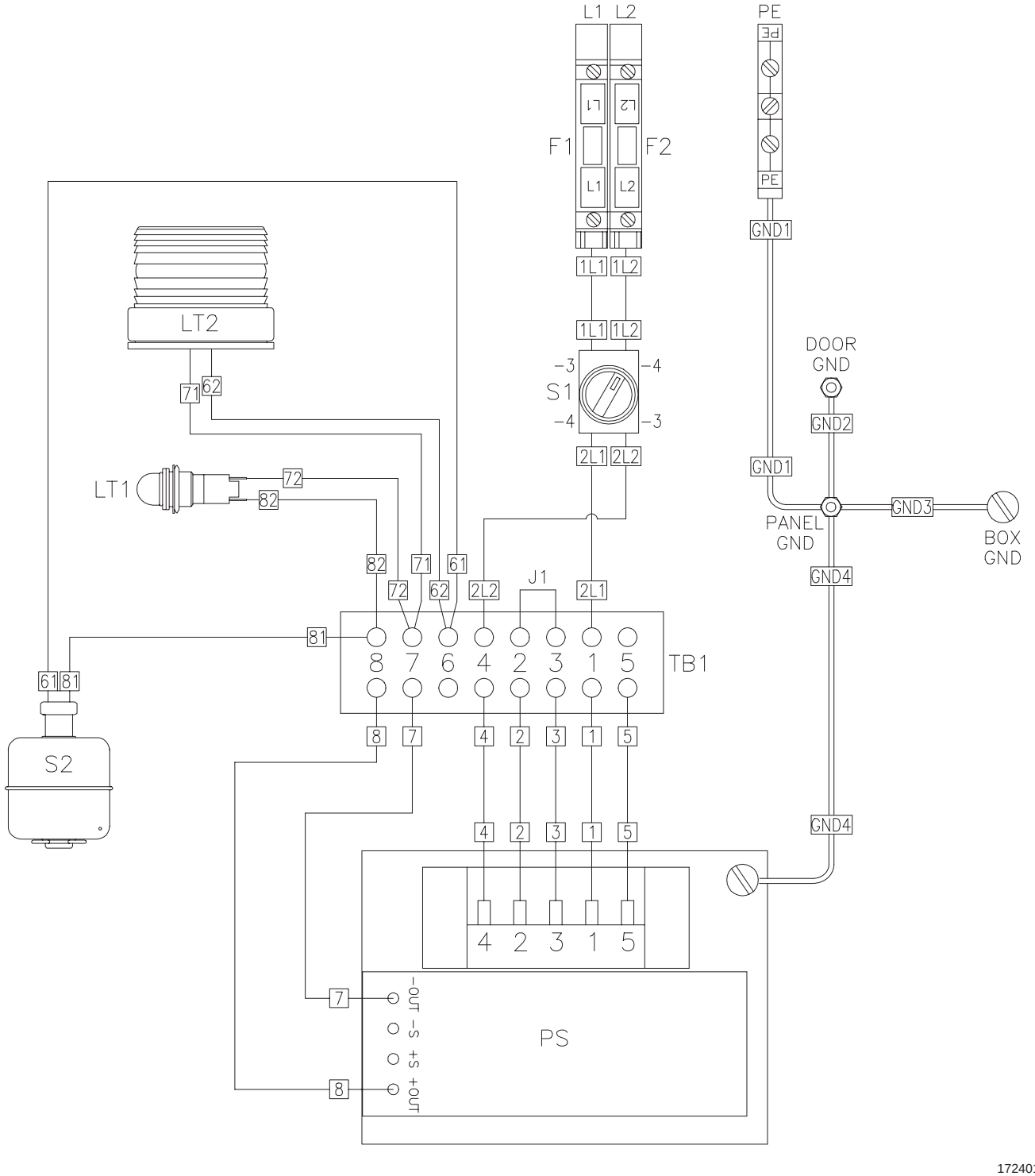


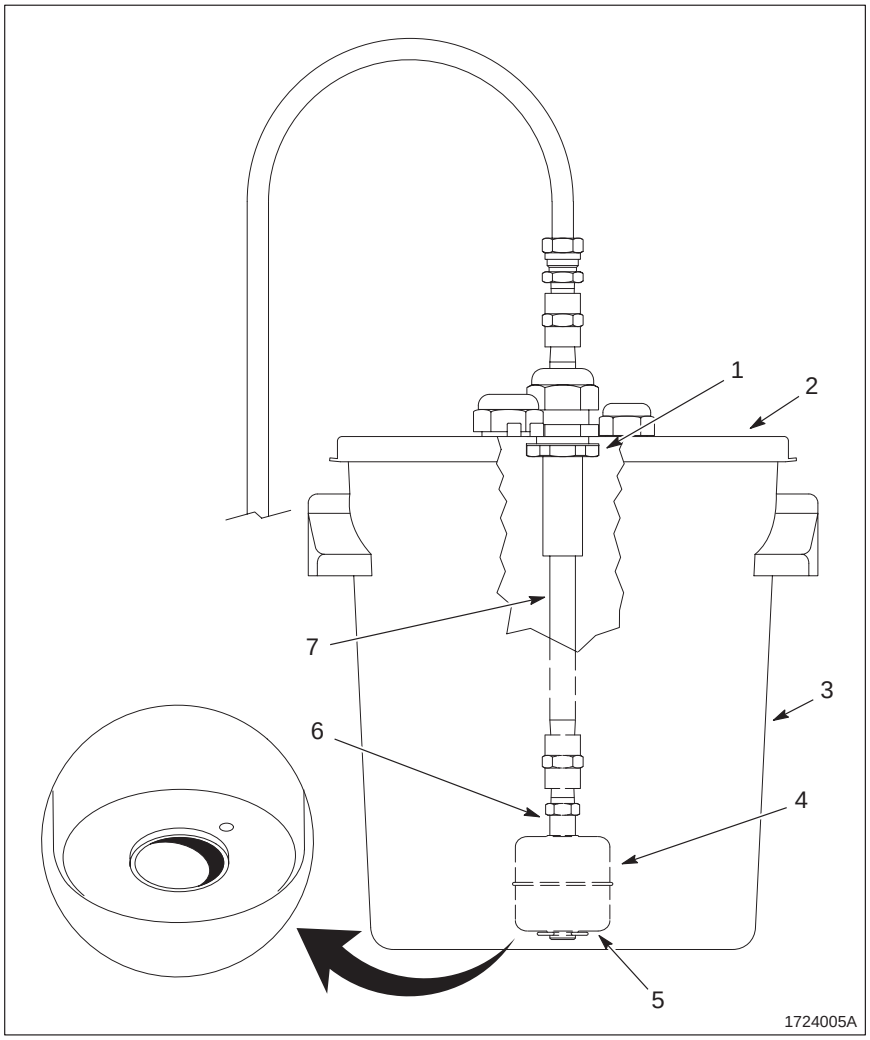
Fig. 4 Wiring diagram

Float Assembly

1. See Figure 5. Remove the clip (5) securing the float (4) to the liquid level switch (6). Remove the float (4).
2. Remove the nut (1) from the float assembly (7).
3. Remove the reservoir lid (2) from the reservoir assembly (3).
4. Remove the dome plug from the reservoir lid (2).
5. Insert the float assembly (7) through the reservoir lid (2).
6. Use the nut (1) to secure the float assembly (7) to the reservoir lid (2).

NOTE: One end of the float is marked with an “O”.

7. Attach the float (4), with the “O” pointing down, to the liquid level switch (6).
8. Attach the clip (5) to the float assembly (7).
9. Fasten the reservoir lid (2) to the reservoir assembly (3).



1. Nut
2. Reservoir lid
3. Reservoir assembly
4. Float
5. Clip
6. Liquid level switch
7. Float assembly

Fig. 5 Float assembly installation

6. Operation

Operating the Level Detector consists of turning the POWER switch on or off.

7. Troubleshooting

These procedures cover only the most common problems that you may encounter. If you cannot solve the problem with the information given here, contact your local Nordson representative for help.

WARNING: Allow only qualified personnel to perform the following tasks. Observe and follow the safety instructions in this document and all other related documentation.

WARNING: Power is applied during voltage checks. Use extreme caution while performing voltage checks. Contact with energized components may cause severe shock or death.

NOTE: Use Figures 4 and 6 for troubleshooting.

Problem	Possible Cause	Corrective Action
1. OPERATING light does not come on when POWER switch is on	The wire connections are loose.	Disconnect power. Check for loose wire connections.
	The light bulb is burned out.	Disconnect power. Check resistance of the light bulb. If infinite resistance (open circuit) exists, replace the light bulb.
	The power supply is defective.	Refer to Problem 5.

7. Troubleshooting (contd.)

Problem	Possible Cause	Corrective Action
2. Strobe light is on when reservoir is full	The float is installed incorrectly.	Remove the float assembly from the reservoir. Turn power on. Slide the float upward. If the strobe light comes on, the float is installed incorrectly. The “O” must be on the bottom.
	The liquid level switch is defective.	If the float is installed correctly and the strobe light remains on, replace the liquid level switch. Refer to Liquid Level Switch repair procedures.
3. Strobe light is off when reservoir is empty	The POWER switch is off.	Turn the POWER switch on.
	The wire connections are loose.	Check for loose or broken wires.
	The float is restricted.	Make sure float moves freely and drops to the retainer clip.
	The OPERATING light is not on.	Perform the corrective actions described for Problem 1.
	The float switch is defective.	Turn power on. Check for 24 VDC at TB1-6 and TB1-7. If voltage is present, go to Problem 4. If voltage is not present, disconnect power. Place a jumper wire between TB1-6 and TB1-8. Turn power on. If strobe light comes on, the float switch must be replaced.
4. Strobe light does not work	The light bulb is defective.	Turn power on. Check for 24 VDC at TB1-6 and TB1-7. The strobe should start blinking. If it does not blink, carefully remove the strobe lens. Check for 350–360 VDC between the 2 copper pieces that retain the bulb. If voltage is present, replace the bulb. If voltage is not present, go to next possible cause.
	The strobe unit is defective.	Check for 350–360 VDC between the 2 copper pieces that retain the bulb. If voltage is not present, replace strobe unit.

Problem	Possible Cause	Corrective Action
5. No power to the unit	The fuse is defective.	Check fuses. Replace if blown. Turn power on. Verify input voltage is present before and after fuse holder. Check for 100–240 VAC between L1 and L2 before the fuse holder. Check for 100–240 VAC between 1L1 and 1L2 after fuse holder. If voltage is present after the fuse, go to next Possible Cause.
	The POWER switch is defective.	Make sure POWER switch is on. Check POWER switch voltage between 1L1 and 1L2 before switch. Check voltage between 2L1 and 2L2 after switch. If 100–240 VAC is not present between these points, replace power switch.
	The power supply is defective.	Turn power on. Check for 24 VDC between TB1-7 and TB1-8. If 24 VDC is not present, check for input voltage between wires 2L1 and 2L2. Make sure wires 2L1, 2L2 and jumpers are connected to the proper terminal strip positions as shown on the chart on the enclosure door. If input voltage is present and voltage is not present at TB1-7 and TB1-8, replace the power supply.

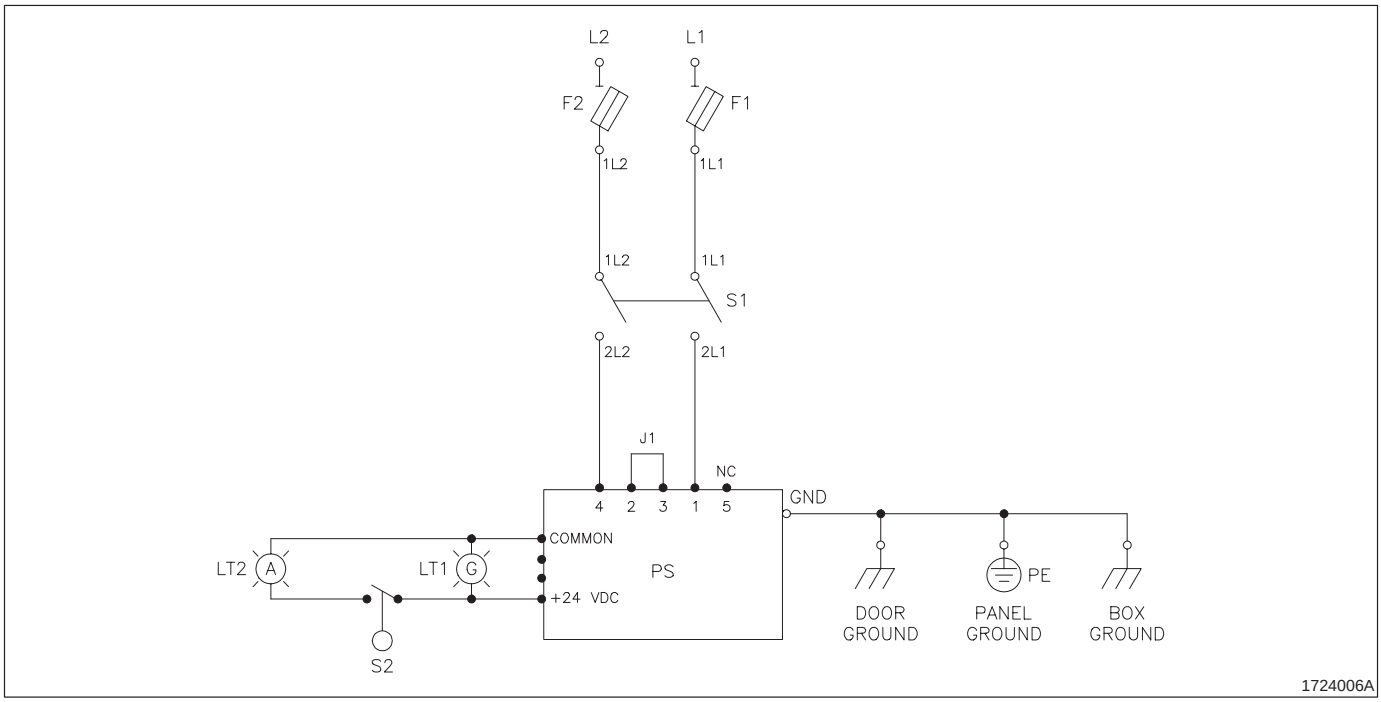


Fig. 6 Electrical schematic

8. Repair

WARNING: Allow only qualified personnel to perform the following tasks. Observe and follow the safety instructions in this document and all other related documentation.

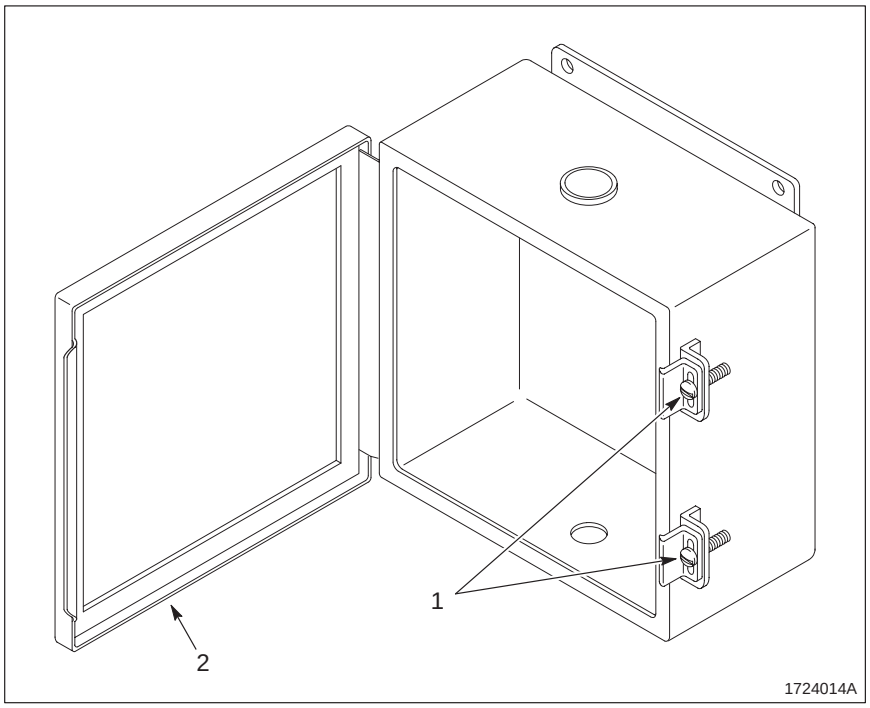
WARNING: To prevent injury to personnel or damage to equipment, disconnect and lock out main power supply before performing any repairs.

NOTE: Refer to the wiring diagram (Figure 4) when you to disconnect and connect wires to make repairs.

It may be necessary to open the enclosure door for some repairs. Use the following procedure for opening and closing the enclosure door:

1. See Figure 7. Loosen the latch screws (1) securing the door.

2. After repairing the Level Detector, close the enclosure door (2). Tighten the latch screws (1) securely.



1. Latch screws
2. Enclosure door

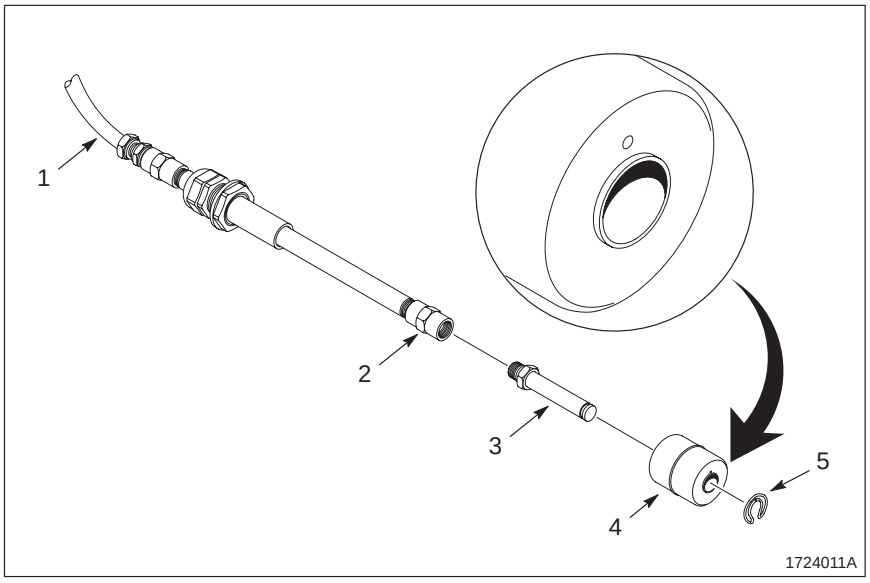
Fig. 7 Opening and closing enclosure door

Liquid Level Switch

1. Open the enclosure door.
2. Disconnect these wire leads from TB1:

   61 from TB1-6
   81 from TB1-8
3. See Figure 8. Remove the clip (5) securing the float (4) to the liquid level switch (3).
4. Disconnect the liquid level switch (3) from the pipe coupling (2).
5. Pull the wire leads about 4 in. out of the conduit (1). Cut the wire leads at the liquid level switch. Do not remove the existing wire leads inside the conduit at this time.
6. Attach the new wire leads to the existing wire leads. Carefully pull the new wire leads through the conduit (1).
7. Remove the old wire leads. Do not connect the wire leads to the terminal block at this time.
8. Apply pipe adhesive to the threads of the liquid level switch (3).
9. Install the liquid level switch (3) on the pipe coupling (2). Tighten it securely.
10. Install the float (4), with the “O” pointing down, on the liquid level switch (3). Install the clip (5).
11. Connect these wire leads to TB1:

    61 to TB1- 6
    81 to TB1-8
12. Close and secure the enclosure door.

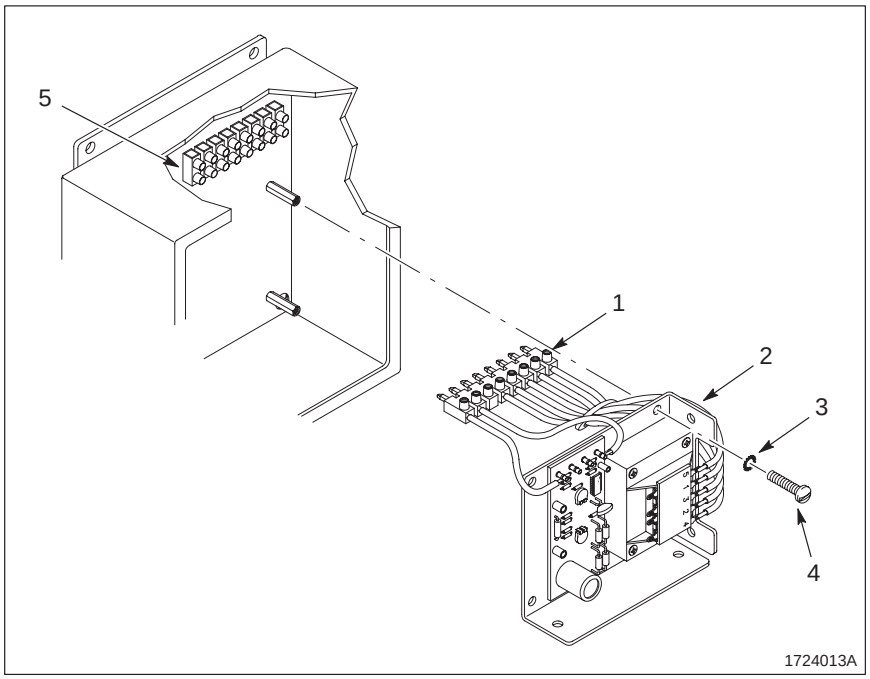


1. Conduit
2. Pipe coupling
3. Liquid level switch
4. Float
5. Clip

Fig. 8 Liquid level switch replacement

Power Supply

1. Open the enclosure door.
2. See Figure 9. Disconnect the power supply connector (1) from TB1 (5).
3. Remove the screws (4) and lockwashers (3) securing the power supply (2).
4. Use the lockwashers (3) and screws (4) to install the new power supply (2).
5. Connect the power supply connector (1) to TB1 (5).
6. Close the enclosure door.



1. Power supply connector
2. Power supply
3. Lockwashers
4. Screws
5. TB1

Fig. 9 Power supply replacement

Switch

1. See Figure 10. Open the enclosure door (5).
2. Disconnect these wires from switch S1 (4):

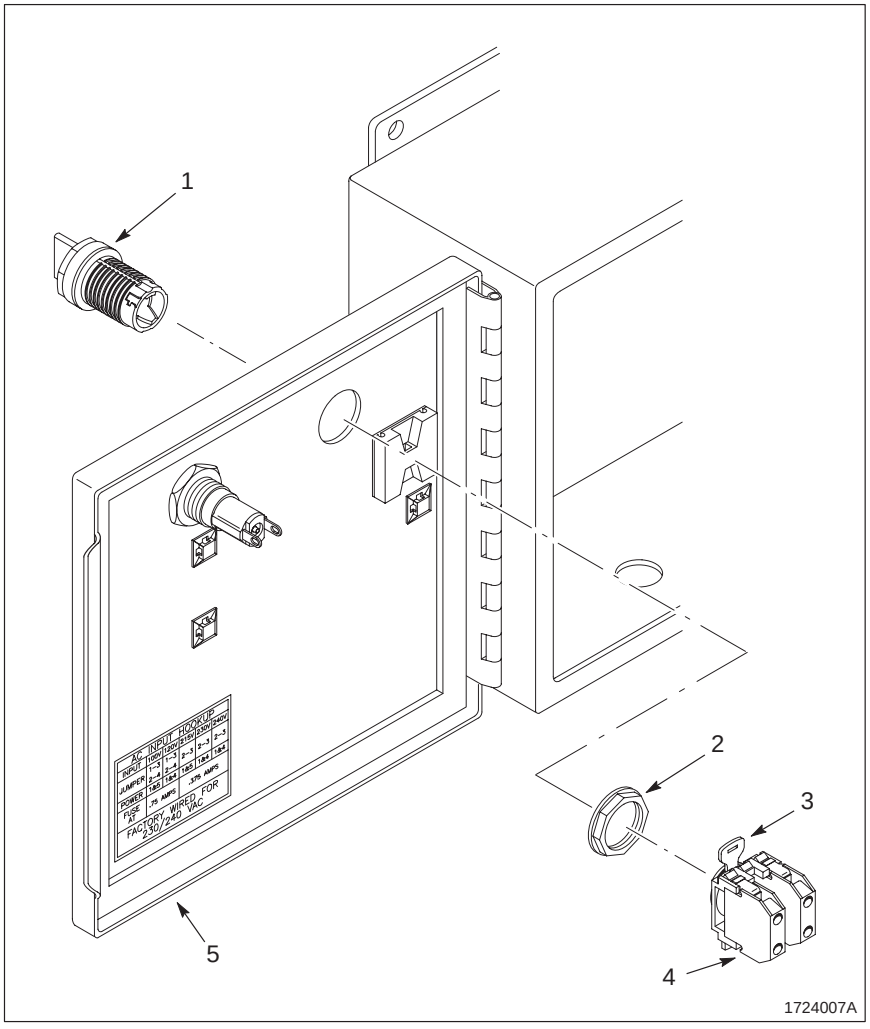
   1L1 from S1-3
   1L2 from S1-4
   2L1 from S1-4
   2L2 from S1-3

Switch *(contd.)*

3. Pull up and rotate the tab (3). Remove the switch from the knob (1).
4. Remove the nut (2) securing the knob (1) to the enclosure door (5).
5. Remove the knob (1) from the new switch by pulling up and rotating the tab (3).
6. Use the nut (2) to install the knob (1) on the enclosure door (5).
7. Install the switch (4) on the knob (1). Pull up and rotate the tab (3) to lock it.
8. Connect these wires to switch S1 (4):

   1L1 to S1-3
   1L2 to S1-4
   2L1 to S1-4
   2L2 to S1-3

9. Close and secure the enclosure door (5).



1. Knob
2. Nut
3. Tab
4. Switch S1
5. Enclosure door

Fig. 10 Switch replacement

Fuse

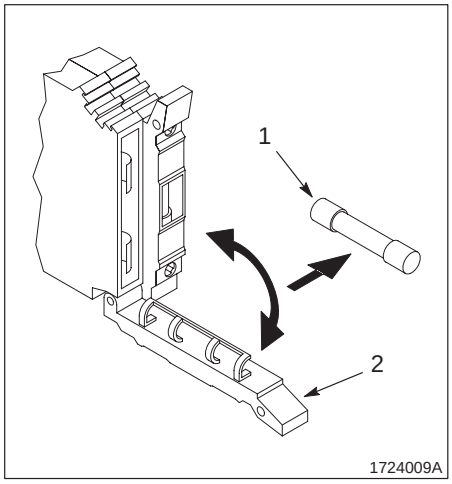


Fig. 11 Fuse replacement

1. Fuse
2. Fuse holder door

1. Open the enclosure.
2. See Figure 11. Carefully pull on the fuse holder doors (2). Replace the fuses (1).
3. Push on fuse holder doors (2) to close.
4. Close the enclosure door.

Power Light

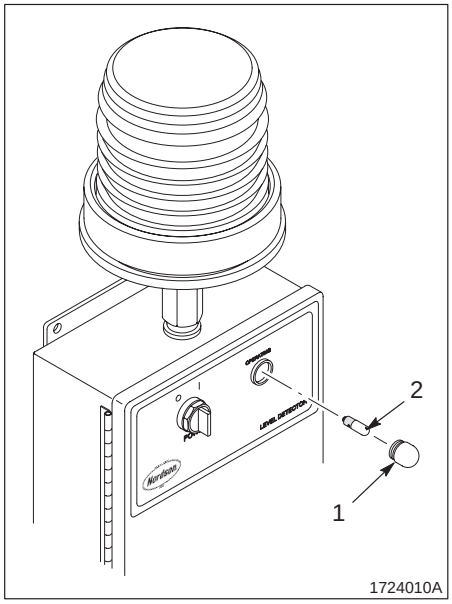


Fig. 12 Light replacement

1. Lens cap
2. Light

1. See Figure 12. Remove the lens cap (1).
2. Remove the light (2).
3. Install a new light (2).
4. Install the lens cap (1). Tighten it securely.

Strobe Light Bulb

WARNING: The strobe light contains energized electrical components. To prevent serious injury, use extreme care when repairing it.

1. See Figure 13. Gently pull on the lens (1) to remove it from the strobe light (4).
2. Disconnect the wire lead of the bulb (2) from the strobe light (4).
3. Spread the retainers to remove the bulb (2) from the socket (3).
4. Spread the retainers to install the new bulb (2) in the socket (3).
5. Connect the wire lead to the strobe light (4).
6. Install the lens (1).

Strobe Light

1. Open the enclosure door.
2. Disconnect these wires from TB1:

   71 from TB1-7
   62 from TB1-6
3. See Figure 13. Unscrew the strobe light (4) from the nipple (5).
4. Insert the wire leads of the new strobe light (4) through the nipple (5). Screw the strobe light onto the nipple.
5. Connect these wires to TB1:

   71 to TB1-7
   62 to TB1-6
6. Close and secure the enclosure door.

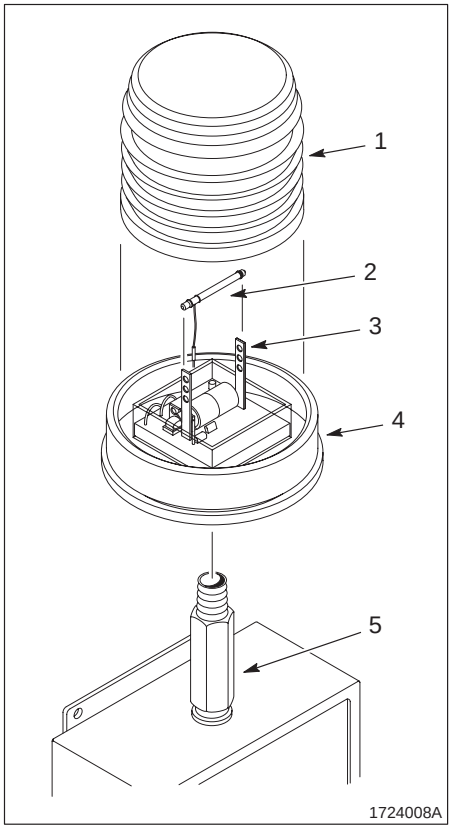


Fig. 13 Strobe bulb and light replacement

1. *Lens*
2. *Bulb*
3. *Socket*
4. *Strobe light*
5. *Nipple*

9. Parts

To order parts, contact your distributor or your local Nordson representative. Use this five-column parts list, and the accompanying illustration, to describe and locate parts.

Using the Illustrated Parts List

Numbers in the Item column correspond to numbers that identify parts in illustrations following each parts list. The code NS (not shown) indicates that a listed part is not illustrated. A dash (—) is used when the part number applies to all parts in the illustration.

The six-digit number in the Part column is the Nordson Corporation part number. A series of dashes in this column (- - - - - -) means the part cannot be ordered separately.

The Description column gives the part name, as well as its dimensions and other characteristics when appropriate. Indentions show the relationships between assemblies, subassemblies, and parts.

Item	Part	Description	Quantity	Note
—	000 000	Assembly	1	
1	000 000	• Subassembly	2	A
2	000 000	• • Part	1	

- If you order the assembly, items 1 and 2 will be included.
- If you order item 1, item 2 will be included.
- If you order item 2, you will receive item 2 only.

The number in the Quantity column is the quantity required per unit, assembly, or subassembly. The code AR (As Required) is used if the part number is a bulk item ordered in quantities or if the quantity per assembly depends on the product version or model.

Letters in the Note column refer to notes at the end of each parts list. Notes contain important information about usage and ordering. Special attention should be given to notes.

Level Detector Parts

See Figure 14.

Item	Part	Description	Quantity	Note
—	121 144	Detector assembly, level	1	
1	117 837	• Light, strobe, 24 VDC, amber	1	
2	179 474	• Bulb	1	
3	973 323	• Nipple, $^1/_2$–14 NPT x 3 in., brass	1	
4	939 475	• Locknut, conduit, $^1/_2$ in.	1	
5	939 122	• Seal, conduit fitting, $^1/_2$ in.	1	
6	933 641	• Block, terminal, 8-station	1	
7	981 035	• Screw	2	
8	119 182	• Power supply	1	
9	983 110	• Lockwasher	4	
10	981 064	• Screw	4	
11	939 925	• Fuse, 0.4 amp	2	
12	939 997	• Fuse holder	2	
13	933 639	• Cover, fuse holder	1	
14	933 413	• Terminal block, ground	1	
15	933 640	• Cover, terminal block	1	
16	933 408	• End stop, universal	1	
17	937 264	• Switch, selector, dpst, 22.5 mm	1	
18	939 946	• Socket, incandescent, green	1	
19	939 142	• Lamp, 37.5 v, incandescent	1	
20	- - - - - -	• Float assembly	1	
21	972 239	• • Connector, $^1/_4$ cond x $^1/_4$ NPT	2	
22	- - - - - -	• • Connector assembly	1	
23	973 324	• • Nipple, sstl, sched 40, $^1/_4$ x 9 in.	1	
24	107 780	• • Switch, level, liquid	1	
25	- - - - - -	• • Float	1	
26	- - - - - -	• • Clip	1	

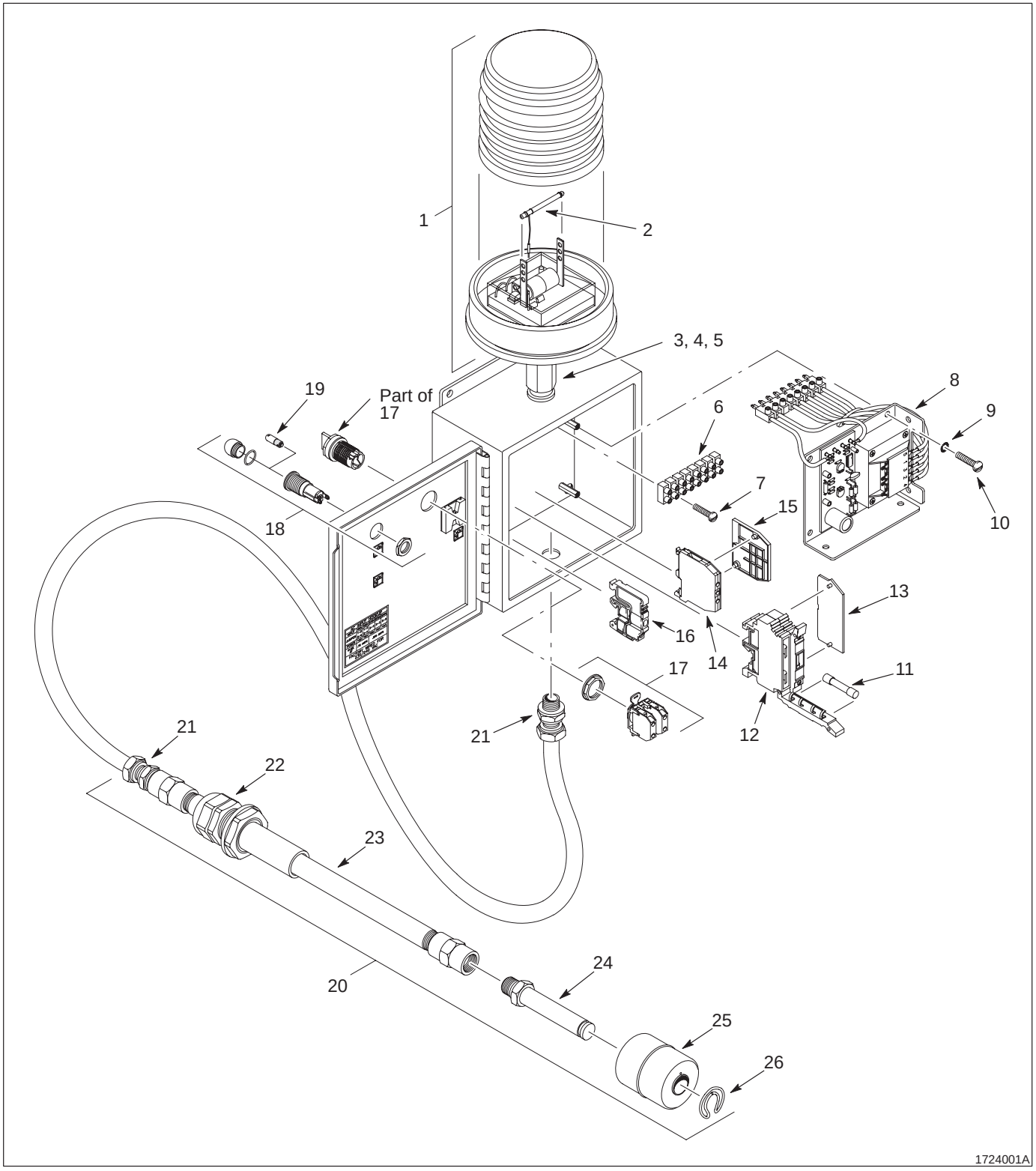


Fig. 14 Level Detector parts

10. Specifications

Dimensions See Figure 15.

Output Voltage 24 VDC

Input Voltage 100, 120, 215, 230, or 240 VAC

Frequency 50/60 Hz

Maximum Amperage 0.5 amps

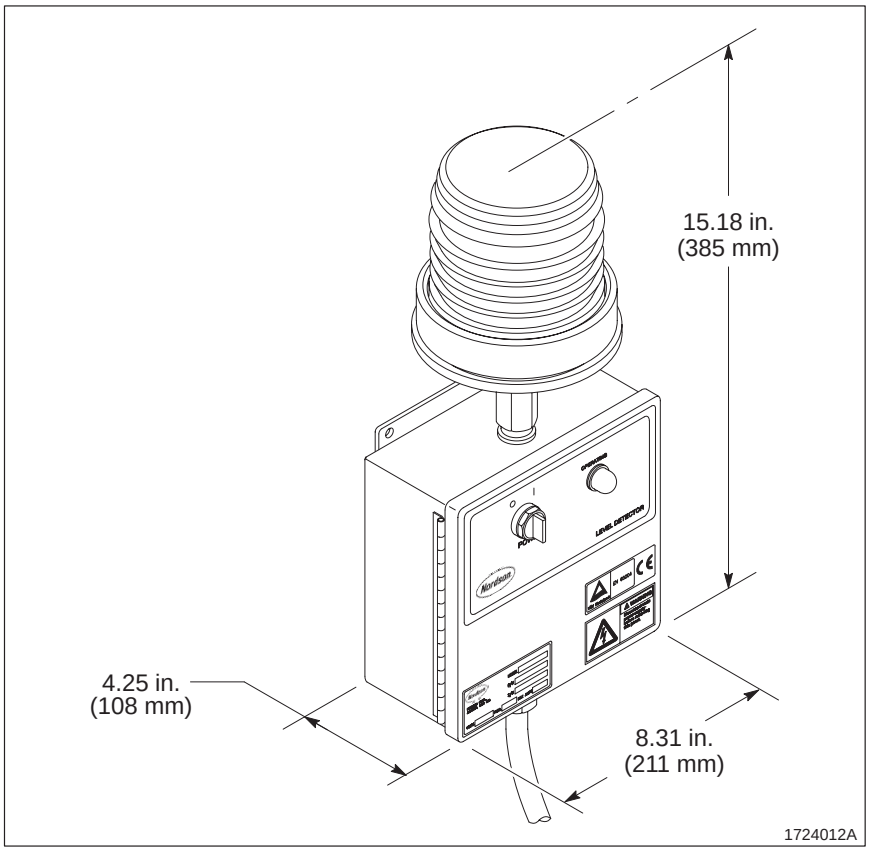


Fig. 15 Dimensions

DECLARATION of CONFORMITY

PRODUCT:

Level Detector (CleanSpray® Technology)

APPLICABLE DIRECTIVES:

89/392/EEC (Machinery)
73/23/EEC (Low Voltage Directive)
89/336/EEC (Electromagnetic Compatibility Directive)

STANDARDS USED TO VERIFY COMPLIANCE:

IEC417	IEC801-2
EN292	IEC801-3
EN60204	IEC801-4
EN50081-2	IEC801-6
EN50082-2	IEC801-8
EN55011	

PRINCIPLES:

This product has been manufactured according to good engineering practice.

The product specified conforms to the directive and standards described above.

Mark Gacka

Date: 16 December 96

Mark Gacka
Vice President, Container Business Group

Nordson

Nordson Corporation • Westlake, Ohio